



Form Approved
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~~Dr. [Signature]~~
Binghamton NY

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Comprehensive Assessment Information Rule
REPORTING FORM

90-930000008

EPA-OTS



0007870220

When completed, send this form to:

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Office of Toxic Substances, TS-790
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
Attention: CAIR Reporting Office

For Agency Use Only:

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Control Number: _____

Docket Number: _____

EPA Form 7710-52

2,6 7 D1

91-08-7

PART A GENERAL REPORTING INFORMATION

1.01 This Comprehensive Assessment Information Rule (CAIR) Reporting Form has been

completed in response to the Federal Register Notice of..... 12 22 88
mo. day year

- ☐ a. If a Chemical Abstracts Service Number (CAS No.) is provided in the Federal Register, list the CAS No. 000097-08-7
- b. If a chemical substance CAS No. is not provided in the Federal Register, list either (i) the chemical name, (ii) the mixture name, or (iii) the trade name of the chemical substance as provided in the Federal Register.
- (i) Chemical name as listed in the rule (NA)
- (ii) Name of mixture as listed in the rule
- (iii) Trade name as listed in the rule
- c. If a chemical category is provided in the Federal Register, report the name of the category as listed in the rule, the chemical substance CAS No. you are reporting on which falls under the listed category, and the chemical name of the substance you are reporting on which falls under the listed category.
- Name of category as listed in the rule (NA)
- CAS No. of chemical substance [][][][][]-[][]-[]
- Name of chemical substance

1.02 Identify your reporting status under CAIR by circling the appropriate response(s).

☐ Manufacturer☐ Importer☒ Processor *Reporting Status Is Processor*

X/P manufacturer reporting for customer who is a processor

X/P processor reporting for customer who is a processor

☐ Mark (X) this box if you attach a continuation sheet.

- 1.07 Exemptions From Reporting -- If you have provided EPA or another Federal agency with the required information on a CAIR Reporting Form for the listed substance within the past 3 years, and this information is current, accurate, and complete for the time period specified in the rule, then sign the certification below. You are required to complete section 1 of this CAIR form and provide any information now required but not previously submitted. Provide a copy of any previous submissions along with your Section 1 submission.

CBI

☐

"I hereby certify that, to the best of my knowledge and belief, all required information which I have not included in this CAIR Reporting Form has been submitted to EPA within the past 3 years and is current, accurate, and complete for the time period specified in the rule."

NA

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____)_____ TELEPHONE NO.	_____ DATE OF PREVIOUS SUBMISSION

- 1.08 CBI Certification -- If you have asserted any CBI claims in this report you must certify that the following statements truthfully and accurately apply to all of those confidentiality claims which you have asserted.

CBI

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"My company has taken measures to protect the confidentiality of the information, and it will continue to take these measures; the information is not, and has not been, reasonably ascertainable by other persons (other than government bodies) by using legitimate means (other than discovery based on a showing of special need in a judicial or quasi-judicial proceeding) without my company's consent; the information is not publicly available elsewhere; and disclosure of the information would cause substantial harm to my company's competitive position."

NA

_____ NAME	_____ SIGNATURE	_____ DATE SIGNED
_____ TITLE	(_____)_____ TELEPHONE NO.	

☐ Mark (X) this box if you attach a continuation sheet.

[illegible]

CBI Name of Buyer []
[][] Mailing Address []
Street
(NA) []
City
[][] [][][][][]-- [][]
State Zip
Employer ID Number []
Date of Purchase [][] [][] [][]
Mo. Day
Contact Person []
Telephone Number [][][]-[][][]-[][][]

8

PART C IDENTIFICATION OF MIXTURES

- 1.17 Mixture -- If the listed substance on which you are required to report is a mixture or a component of a mixture, provide the following information for each component chemical. (If the mixture composition is variable, report an average percentage of each component chemical for all formulations.)

GBI

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Component Name	Supplier Name	Average % Composition by Weight (specify precision, e.g., 45% ± 0.5%)
<u>2,6-Toluene Diisocyanate</u>	<u>Stepan Co.</u>	<u>78%</u>
<u>2,4-Toluene Diisocyanate</u>	<u>Stepan Co.</u>	<u>74%</u>
<u>("U.K.")</u>	<u>Stepan Co.</u>	<u>8%</u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
Total		100%

☐ Mark (X) this box if you attach a continuation sheet.

2.06 Specify the manner in which you processed the listed substance. Circle all appropriate process types.

☐

Continuous process

Semicontinuous process

Batch process

2.07 State your facility's name-plate capacity for manufacturing or processing the listed substance. (If you are a batch manufacturer or batch processor, do not answer this question.)

☐

Manufacturing capacity NA kg

Processing capacity ~~(4000)~~ kg

2.08 If you intend to increase or decrease the quantity of the listed substance manufactured, imported, or processed at any time after your current corporate fiscal year, estimate the increase or decrease based upon the reporting year's production volume.

☐

	Manufacturing Quantity (kg)	Importing Quantity (kg)	Processing Quantity (kg)
Amount of increase	<u>NA</u>	<u>NA</u>	<u>NA</u>
Amount of decrease	<u>NA</u>	<u>NA</u>	<u>(4000) NA</u>

☐ Mark (X) this box if you attach a continuation sheet.

- 2.11 Related Product Types -- List any byproducts, coproducts, or impurities present with the listed substance in concentrations greater than 0.1 percent as it is manufactured, imported, or processed. The source of byproducts, coproducts, or impurities means the source from which the byproducts, coproducts, or impurities are made or introduced into the product (e.g., carryover from raw material, reaction product, etc.).

CBI

☐

<u>CAS No.</u>	<u>Chemical Name</u>	<u>Byproduct, Coproduct, or Impurity</u>	<u>Concentration (%) (specify % precision)</u>	<u>Source of Byproducts, Coproducts, or Impurities</u>
<u>584-84-4</u>	<u>2,4-Toluene Diisocyanate</u>	<u>C</u>	<u> U.K.</u>	<u>Raw Matl.</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Use the following codes to designate byproduct, coproduct, or impurity:

B = Byproduct
C = Coproduct
I = Impurity

☐ Mark (X) this box if you attach a continuation sheet.

- 2.13 Expected Product Types -- Identify all product types which you expect to manufacture, import, or process using the listed substance at any time after your current corporate fiscal year. For each use, specify the quantity you expect to manufacture, import, or process for each use as a percentage of the total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)
- ☐ CBI

a.	b.	c.	d.
Product Types ¹	% of Quantity Manufactured, Imported, or Processed	% of Quantity Used Captively On-Site	Type of End-User
L	100%	0%	H

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/ Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/ Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antivear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CH = Commercial	H = Other (specify) <u>U.S. Government</u>

☐ Mark (X) this box if you attach a continuation sheet.

2.15 Circle all applicable modes of transportation used to deliver bulk shipments of the listed substance to off-site customers.

CBI

NA

- ☐ Truck
- Railcar
- Barge, Vessel
- Pipeline
- Plane
- Other (specify) _____

2.16 Customer Use -- Estimate the quantity of the listed substance used by your customer or prepared by your customers during the reporting year for use under each category of end use listed (i-iv).

CBI

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Category of End Use

NA

i. Industrial Products

Chemical or mixture kg

Article kg

ii. Commercial Products

Chemical or mixture kg

Article kg

iii. Consumer Products

Chemical or mixture kg

Article kg

iv. Other

Distribution (excluding export) kg

Export kg

Quantity of substance consumed as reactant kg

Unknown customer uses kg

☐ Mark (X) this box if you attach a continuation sheet.

3.03
CBI

- a. Circle all applicable containers used to transport the listed substance to your facility.

☐

Bags

Boxes

Free standing tank cylinders

Tank rail cars

Hopper cars

Tank trucks

Hopper trucks

Drums

Pipeline

Other (specify) Metal Cans1

- b. If the listed substance is transported in pressurized tank cylinders, tank rail cars, or tank trucks, state the pressure of the tanks.

Tank cylinders NA mmH

Tank rail cars mmH

Tank trucks mmH

☐ Mark (X) this box if you attach a continuation sheet.

PART C RAW MATERIAL VOLUME

3.05 State the quantity of the listed substance used as a raw material during the reporting year in the form of a class I chemical, class II chemical, or polymer, and the percent composition, by weight, of the listed substance.

☐

	Quantity Used (kg/yr)	% Composition by Weight of Listed Sub- stance in Raw Material (specify - % precise)
Class I chemical	22.7	18%
Class II chemical		
Polymer		

☐ Mark (X) this box if you attach a continuation sheet.

GENERAL ELECTRIC COMPANY
600 MAIN STREET
JOHNSON CITY NY 13790

NF 00956 01

MATERIAL SAFETY DATA SHEET

DATE: 03/02/90 CUST # 39795-701 P.O.# 34929 PAGE: 1
PRODUCT NUMBER: 188478 PRODUCT NAME: STEPANFOAM BH-614-T

*
* STEPAN COMPANY
* NORTHFIELD, IL. 60093
* (708) 446-7500

* EMERGENCY INFORMATION
* MEDICAL: 1-800-228-5635
* CHEMTREC: 1-800-424-9300

* SECTION I: GENERAL INFORMATION

PRODUCT NUMBER: 188478 PRODUCT NAME: STEPANFOAM BH-614-T
PRODUCT CLASS: TOLUENE DIISOCYANATE.
PRECAUTIONS: POISON.
REFER TO BILL OF LADING OR CONTAINER LABEL FOR DOT OR OTHER
TRANSPORTATION HAZARD CLASSIFICATION, IF ANY.

* SECTION II: HAZARDOUS INGREDIENTS

INGREDIENT (CAS #)

OSHA PEL
(PPM)

ACGIH TLV
(PPM)

OTHER

(CONTINUED)

NF 00956 01

MATERIAL SAFETY DATA SHEET

DATE: 03/02/90

CUST # 39795-701

P.O.# 34929

PAGE:

PRODUCT NUMBER: 188478

PRODUCT NAME: STEPANFOAM BH-614-T

INCOMPATABILITY (MATERIALS TO AVOID):

STRONG OXIDIZING AGENTS

WATER, ALCOHOLS, AMINES, ALKALIES, METAL COMPOUNDS (CATALYSTS)

HAZARDOUS DECOMPOSITION PRODUCTS:

CYANIDES AND AMMONIA MAY BE FORMED.

SECTION VI: HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE/EMERGENCY AND FIRST AID PROCEDURES

EYES: CONTACT WITH EYES IS PAINFUL AND IRRITATING.

FLUSH EYES IMMEDIATELY WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

SKIN: PROLONGED OR REPEATED CONTACT WITH SKIN CAUSES IRRITATION. WASH OFF SKIN WITH WATER. REMOVE CONTAMINATED CLOTHING / CLEAN BEFORE REUSE.

INHALATION: MAY CAUSE RESPIRATORY SENSITIZATION AND IRRITATE SKIN, EYES AND RESPIRATORY TRACT WITH POSSIBLE PERMANENT DECREASE IN LUNG FUNCTION. MAY AGGRAVATE ASTHMA OR OTHER PRE-EXISTING RESPIRATORY CONDITIONS.

INGESTION: IF SWALLOWED, CONSULT A PHYSICIAN IMMEDIATELY.

CHRONIC EFFECTS AND MEDICAL CONDITIONS AGGRAVATED BY OVEREXPOSURE: CHRONIC EFFECTS AND MEDICAL CONDITIONS AGGRAVATED BY OVER-EXPOSURE TO THIS PRODUCT INCLUDE ASTHMA, OTHER RESPIRATORY DISORDERS (BRONCHITIS, EMPHYSEMA, BRONCHIAL HYPERREACTIVITY), SKIN ALLERGIES, ECZEMA. UNNECESSARY EXPOSURE TO THIS PRODUCT OR ANY CHEMICAL SHOULD BE AVOIDED.

IF ANY SYMPTOMS PERSIST, CONSULT A PHYSICIAN.

IN A NATIONAL TOXICOLOGY PROGRAM (NTP) STUDY, TDI WAS CARCINOGENIC WHEN GIVEN ORALLY TO RATS AND MICE AT MAXIMUM TOLERATED DOSES. TDI WAS NOT CARCINOGENIC TO RATS IN A TWO-YEAR INHALATION STUDY.

SEE SECTION II FOR HAZARDOUS INGREDIENTS PRESENT IN THIS PRODUCT AND THEIR CORRESPONDING THRESHOLD LIMIT VALUES.

FOR ADDITIONAL MEDICAL INFORMATION, CALL 1-800-228-5635

SECTION VII: SPILL, LEAK, AND DISPOSAL PROCEDURES

CONTAIN ALL SPILLS AND LEAKS TO PREVENT DISCHARGE INTO THE ENVIRONMENT.
VENTILATE AREA.

(CONTINUED)

00956 01

MATERIAL SAFETY DATA SHEET

DATE: 03/02/90

CUST # 39795-701

P.O.# 34929

PAGE: 5

PRODUCT NUMBER: 188478

PRODUCT NAME: STEPANFOAM BH-614-T

THIS DATA SHEET HAS BEEN ASSEMBLED BY THE MANUFACTURER BASED ON ITS OWN STUDIES AND ON THE WORK OF OTHERS. THE MANUFACTURER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AS TO THE ACCURACY, COMPLETENESS, OR ADEQUACY OF THE INFORMATION CONTAINED HEREIN. THE MANUFACTURER SHALL NOT BE LIABLE (REGARDLESS OF FAULT) TO THE VENDEE, THE VENDEE'S EMPLOYEES, OR ANYONE FOR ANY DIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE ACCURACY, COMPLETENESS, ADEQUACY, OR FURNISHING OF SUCH INFORMATION.

(R) REGISTERED TRADEMARK OR APPLICATION PENDING.

- 4.05 Particle Size -- If the listed substance exists in particulate form during any of the following activities, indicate for each applicable physical state the size and the percentage distribution of the listed substance by activity. Do not include particles ≥ 10 microns in diameter. Measure the physical state and particle sizes for importing and processing activities at the time you import or begin to process the listed substance. Measure the physical state and particle sizes for manufacturing, storage, disposal and transport activities using the final state of the product.

CBI

☐

Physical State		NA					
		Manufacture	Import	Process	Store	Dispose	Transport
Dust	<1 micron						
	1 to <5 microns						
	5 to <10 microns						
Powder	<1 micron						
	1 to <5 microns						
	5 to <10 microns						
Fiber	<1 micron						
	1 to <5 microns						
	5 to <10 microns						
Aerosol	<1 micron						
	1 to <5 microns						
	5 to <10 microns						

☐ Mark (X) this box if you attach a continuation sheet.

PART B PARTITION COEFFICIENTS

5.02 a. Specify the half-life of the listed substance in the following media.

<u>Media</u>	<u>Half-life (specify units)</u>
Groundwater	("U.K.")
Atmosphere	("U.K.")
Surface water	("U.K.")
Soil	("U.K.")

b. Identify the listed substance's known transformation products that have a half-life greater than 24 hours. ("U.K.")

<u>CAS No.</u>	<u>Name</u>	<u>Half-life (specify units)</u>	<u>Media</u>
			in
			in
			in
			in

5.03 Specify the octanol-water partition coefficient, K_{ow} ... ("U.K.") at 25
Method of calculation or determination

5.04 Specify the soil-water partition coefficient, K_d ("U.K.") at 25
Soil type

5.05 Specify the organic carbon-water partition coefficient, K_{oc} ("U.K.") at 25

5.06 Specify the Henry's Law Constant, H ("U.K.") atm-m³/mol

☐ Mark (X) this box if you attach a continuation sheet.

6.04 For each market listed below, state the quantity sold and the total sales value of the listed substance sold or transferred in bulk during the reporting year.

☐

<u>Market</u>	<u>Quantity Sold or Transferred (kg/yr)</u>	<u>Total Sales Value (\$/yr)</u>
Retail sales		
Distribution -- Wholesalers		
Distribution -- Retailers		
Intra-company transfer		
Repackagers		
Mixture producers		
Article producers		
Other chemical manufacturers or processors		
Exporters		
Other (specify)		

6.05 Substitutes -- List all known commercially feasible substitutes that you know exist for the listed substance and state the cost of each substitute. A commercially feasible substitute is one which is economically and technologically feasible to use in your current operation, and which results in a final product with comparable performance in its end uses.

CBI

☐

<u>Substitute</u>	<u>Cost (\$/kg)</u>
<i>None Presently Identified</i>	

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 7 MANUFACTURING AND PROCESSING INFORMATION

General Instructions:

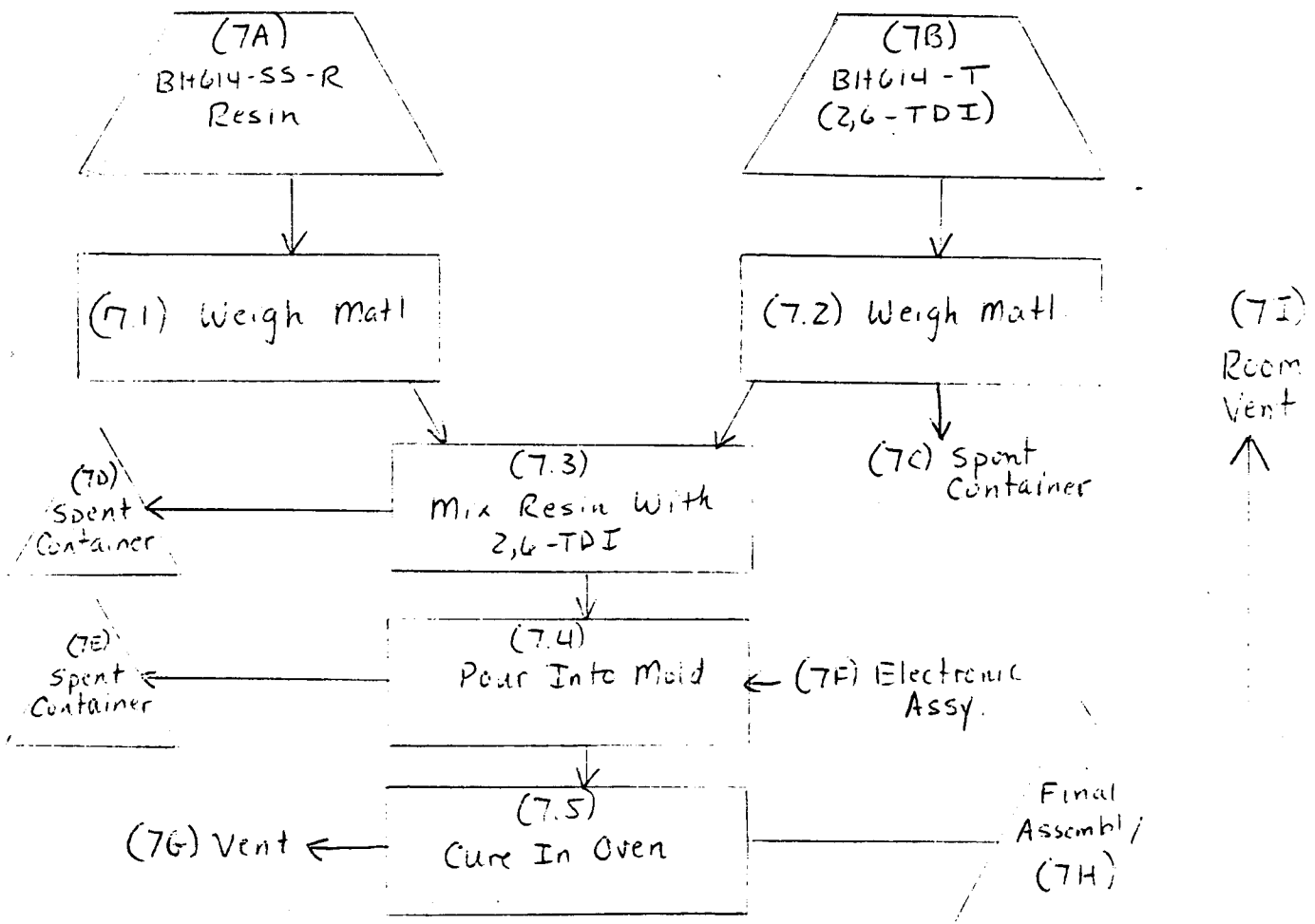
For questions 7.04-7.06, provide a separate response for each process block flow diagram provided in questions 7.01, 7.02, and 7.03. Identify the process type from which the information is extracted.

PART A MANUFACTURING AND PROCESSING PROCESS TYPE DESCRIPTION

7.01 In accordance with the instructions, provide a process block flow diagram showing the major (greatest volume) process type involving the listed substance.

CBI

☐ Process type Encapsulation / Potting



☐ Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Encapsulating / Potting

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composi:
<u>7.1</u>	<u>Paper Cup</u>	<u>Room</u>	<u>Room</u>	<u>Paper</u>
<u>7.2</u>	<u>Paper Cup</u>	<u>Room</u>	<u>Room</u>	<u>Paper</u>
<u>7.3</u>	<u>Paper Cup</u>	<u>Room</u>	<u>Room</u>	<u>Paper</u>
<u>7.4</u>	<u>Mold</u>	<u>Room</u>	<u>Room</u>	<u>RTV A</u>
<u>7.5</u>	<u>Oven</u>	<u>110° ± 5°</u>	<u>Room</u>	<u>Steel</u>
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type Encapsulating / Potting

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds ¹	Concentrations ^{2,3} (% or ppm)	Other Expected Compounds	Estimated Concentration (% or ppm)
7A	BH-614-SS-R	100%	None	NA
7B	BH-614-T	100%	2,6-TDI	18%
			2,4-TDI	74%
7C	BH-614-T	100%	2,6-TDI	18%
			2,4-TDI	74%
7D	Mixed Resin	100%	None	NA
7E	Solidified Resin	100%	Ammonia	("U.K.")
7F	NA	NA	NA	NA
7G	Isocyanates	("U.K.")	NA	NA
	Ammonia	("U.K.")	NA	NA
7H	NA	NA	NA	NA
7I	Isocyanates	("U.K.")	NA	NA

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 8 RESIDUAL TREATMENT GENERATION, CHARACTERIZATION, TRANSPORTATION, AND MANAGEMENT

General Instructions:

For questions 8.04-8.06, provide a separate response for each residual treatment block flow diagram provided in question 8.01, 8.02 or 8.03. Identify the process type from which the information is extracted.

For questions 8.05-8.33, the Stream Identification Codes are those process streams listed in either the Section 7 or Section 8 block flow diagrams which contain residuals for each applicable waste management method.

For questions 8.07-8.33, if residuals are combined before they are handled, list those Stream Identification Codes on the same line.

Questions 8.09-8.33 refer to the waste management activities involving the residuals identified in either the Section 7 or Section 8 block flow diagrams. Not all Stream Identification Codes used in the sample answers (e.g., for the incinerator questions) have corresponding process streams identified in the block flow diagram(s). These Stream Identification codes are for illustrative purposes only.

For questions 8.11-8.33, if you have provided the information requested on one of the EPA Office of Solid Waste surveys listed below within the three years prior to your reporting year, you may submit a copy or reasonable facsimile in lieu of answering those questions which the survey addresses. The applicable surveys are: (1) Hazardous Waste Treatment, Storage, Disposal, and Recycling Survey; (2) Hazardous Waste Generator Survey; or (3) Subtitle D Industrial Facility Mail Survey.

☐ Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

() Process type Encapsulating / Potting

[illegible]

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

8.05 (continued)

³ For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each compound. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1	N/A	
2		
3		
4		
5		

⁴ Use the following codes to designate how the concentration was determined:

- A = Analytical result
E = Engineering judgement/calculation

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

- 8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type Encapsulating / Potting

a.	b.	c.	d.	e.		f.	g.
Stream ID Code	Waste Description Code	Management Method Code ²	Residual Quantities (kg/yr)	Management of Residual (%)		Costs for Off-Site Management (per kg)	Changes Management Method
<u>7C</u>	<u>B67/B69</u>	<u>1ST</u>	<u>.227</u>	<u>100%</u>		<u>("U.K.")</u>	<u>NA</u>
<u>7D</u>	<u>B67/B69</u>	<u>1ST</u>	<u>("U.K.")</u>	<u>100%</u>		<u>("U.K.")</u>	<u>NA</u>
<u>7E</u>	<u>B82</u>	<u>1ST</u>	<u>("U.K.")</u>	<u>100%</u>		<u>("U.K.")</u>	

¹Use the codes provided in Exhibit 8-1 to designate the waste descriptions

²Use the codes provided in Exhibit 8-2 to designate the management methods

☐ Mark (X) this box if you attach a continuation sheet.

EXHIBIT 8-2.
(Refers to question 8.06(c))

MANAGEMENT METHODS

- M1 - Discharge to publicly owned wastewater treatment works
- M2 - Discharge to surface water under NPDES
- M3 - Discharge to off-site, privately owned wastewater treatment works
- M4 - Scrubber: a) caustic; b) water; c) other
- M5 - Vent to: a) atmosphere; b) flare; c) other (specify) _____
- M6 - Other (specify) _____

TREATMENT AND RECYCLING

Incineration/thermal treatment

- 1I Liquid injection
- 2I Rotary or rocking kiln
- 3I Rotary kiln with a liquid injection unit
- 4I Two stage
- 5I Fixed hearth
- 6I Multiple hearth
- 7I Fluidized bed
- 8I Infrared
- 9I Fume/vapor
- 10I Pyrolytic destructor
- 11I Other incineration/thermal treatment

Reuse as fuel

- 1RF Cement kiln
- 2RF Aggregate kiln
- 3RF Asphalt kiln
- 4RF Other kiln
- 5RF Blast furnace
- 6RF Sulfur recovery furnace
- 7RF Smelting, melting, or refining furnace
- 8RF Coke oven
- 9RF Other industrial furnace
- 10RF Industrial boiler
- 11RF Utility boiler
- 12RF Process heater
- 13RF Other reuse as fuel unit

Fuel Blending

- 1FB Fuel blending

Solidification

- 1S Cement or cement/silicate processes
- 2S Pozzolanic processes
- 3S Asphaltic processes
- 4S Thermoplastic techniques
- 5S Organic polymer techniques
- 6S Jacketing (macro-encapsulation)
- 7S Other solidification

Recovery of solvents and liquid organics for reuse

- 1SR Fractionation
- 2SR Batch still distillation
- 3SR Solvent extraction
- 4SR Thin-film evaporation
- 5SR Filtration
- 6SR Phase separation
- 7SR Dessication
- 8SR Other solvent recovery

Recovery of metals

- 1MR Activated carbon (for metals recovery)
- 2MR Electrodialysis (for metals recovery)
- 3MR Electrolytic metal recovery
- 4MR Ion exchange (for metals recovery)
- 5MR Reverse osmosis (for metals recovery)
- 6MR Solvent extraction (for metals recovery)
- 7MR Ultrafiltration (for metals recovery)
- 8MR Other metals recovery

Wastewater Treatment

After each wastewater treatment type listed below (1VT - 66VT) specify a) tank; or b) surface impoundment (i.e., 63VTa)

Equalization

- 1VT Equalization

Cyanide oxidation

- 2VT Alkaline chlorination
- 3VT Ozone
- 4VT Electrochemical
- 5VT Other cyanide oxidation

General oxidation (including disinfection)

- 6VT Chlorination
- 7VT Ozonation
- 8VT UV radiation
- 9VT Other general oxidation

Chemical precipitation¹

- 10VT Lime
- 11VT Sodium hydroxide
- 12VT Soda ash
- 13VT Sulfide
- 14VT Other chemical precipitation

Chromium reduction

- 15VT Sodium bisulfite
- 16VT Sulfur dioxide

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1						
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes

No

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

☐

Incinerator	Air Pollution Control Device ¹	Types of Emissions Data Available
1		
2		
3		

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes

No

¹Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)

E = Electrostatic precipitator

O = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

CBI

☐

Data Element	Data are Maintained for:		Year in Which Data Collection Began	Number of Years Records Are Maintained
	Hourly Workers	Salaried Workers		
Date of hire	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Age at hire	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Work history of individual before employment at your facility	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Sex	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Race	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Job titles	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Start date for each job title	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
End date for each job title	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Work area industrial hygiene monitoring data	<u>X</u>	<u>X</u>	<u>("N.K.")</u>	<u>Permanent</u>
Personal employee monitoring data	<u>X</u>	<u>X</u>	<u>("N.K.")</u>	<u>Permanent</u>
Employee medical history	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Employee smoking history	<u>X</u>	<u>X</u>	<u>1980</u>	<u>Permanent</u>
Accident history	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Retirement date	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Termination date	<u>X</u>	<u>X</u>	<u>1959</u>	<u>Permanent</u>
Vital status of retirees	<u>X</u>	<u>X</u>	<u>("N.K.")</u>	<u>N.A.</u>
Cause of death data	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

☐

Labor Category

Descriptive Job Title

A

Potting Operator

B

~~Assembly Line~~

C

D

E

F

G

H

I

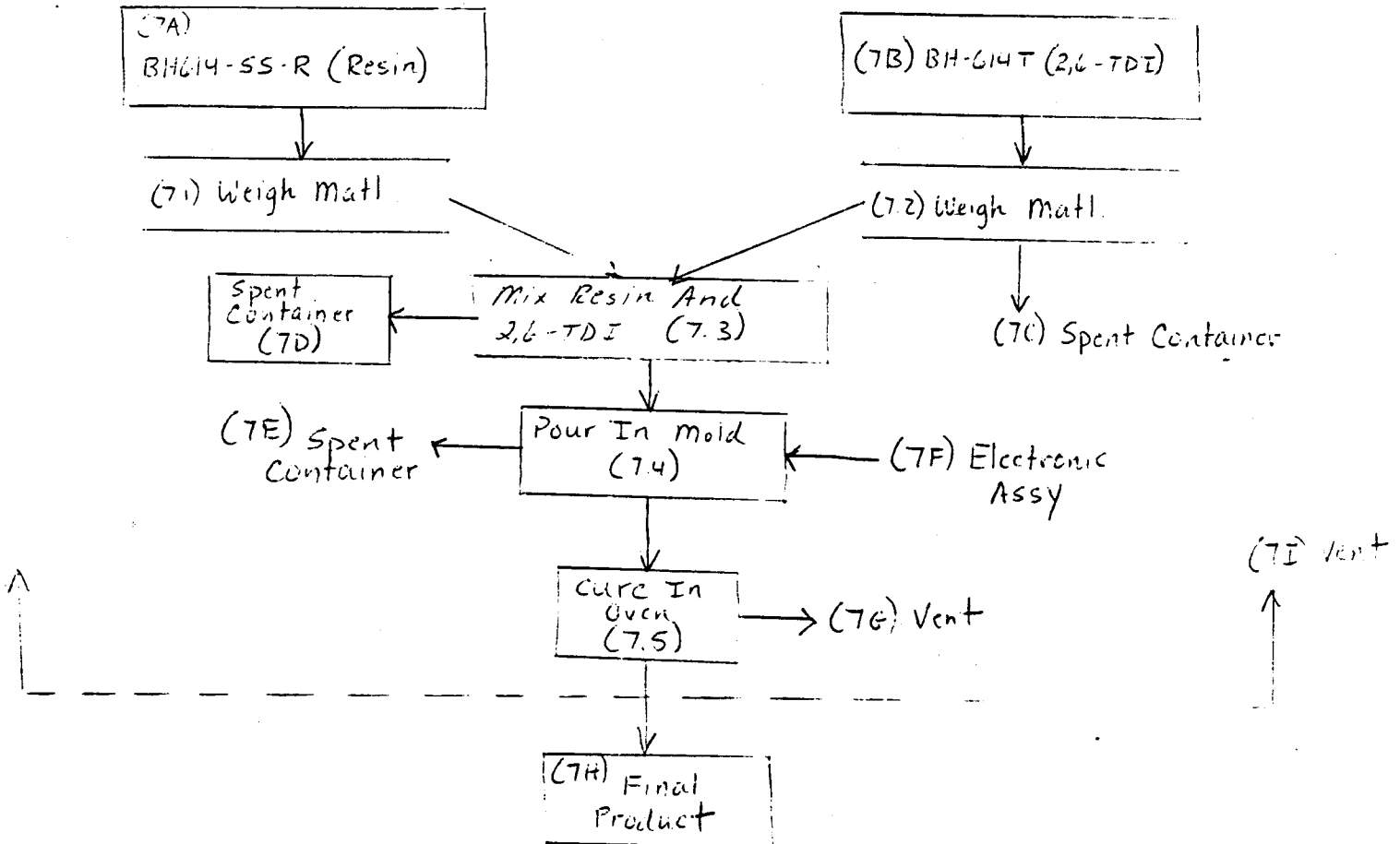
J

☐ Mark (X) this box if you attach a continuation sheet.

9.04 In accordance with the instructions, provide your process block flow diagram(s) and indicate associated work areas.

CBI

☐ Process type Encapsulating / Potting
Operator Contacts Entire Area



☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type Encapsulating / Potting

Work area 1

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
<u>A</u>	<u>5</u>	<u>Skin/Inhalation</u>	<u>OL</u>	<u>D, E</u>	<u>250</u>

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.06 Complete the following table for each work area identified in question 9.05, and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ Process type Encapsulating / Potting

Work area 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number Days per Year Exposed
<u>A</u>	<u>5</u>	<u>Skin/Inhalation</u>	<u>OL</u>	<u>B, C</u>	<u>"U.K."</u>

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)
 GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)
 SO = Solid

SY = Sludge or slurry
 AL = Aqueous liquid
 OL = Organic liquid
 IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less
 B = Greater than 15 minutes, but not exceeding 1 hour
 C = Greater than one hour, but not exceeding 2 hours

D = Greater than 2 hours, but not exceeding 4 hours
 E = Greater than 4 hours, but not exceeding 8 hours
 F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table:

CBI

☐

NA

Sample/Test	Work Area ID	Testing Frequency (per year)	Number of Samples (per test)	Who Samples ¹	Analyzed In-House (Y/N)	Number of Years Records Maintained
Personal breathing zone						
General work area (air)						
Wipe samples						
Adhesive patches						
Blood samples						
Urine samples						
Respiratory samples						
Allergy tests						
Other (specify)						
Other (specify)						
Other (specify)						

¹Use the following codes to designate who takes the monitoring samples:

- A = Plant industrial hygienist
- B = Insurance carrier
- C = OSHA consultant
- D = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

9.09 For each sample type identified in question 9.08, describe the type of sampling and analytical methodology used for each type of sample.

☐

Sample Type

NA

Sampling and Analytical Methodology

9.10 If you conduct personal and/or ambient air monitoring for the listed substance, specify the following information for each equipment type used.

CBI

☐

Equipment Type¹

Detection Limit²

Manufacturer

Averaging Time (hr)

Model Number

¹Use the following codes to designate personal air monitoring equipment types:

- A = Passive dosimeter
- B = Detector tube
- C = Charcoal filtration tube with pump
- D = Other (specify) _____

Use the following codes to designate ambient air monitoring equipment types:

- E = Stationary monitors located within work area
- F = Stationary monitors located within facility
- G = Stationary monitors located at plant boundary
- H = Mobile monitoring equipment (specify) _____
- I = Other (specify) _____

²Use the following codes to designate detection limit units:

- A = ppm
- B = Fibers/cubic centimeter (f/cc)
- C = Micrograms/cubic meter (µ/m³)

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type - Encapsulating / Potting

Work area 1

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgrade</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>("N/A")</u>	<u>N</u>	<u>N/A</u>
General dilution	<u>Y</u>	<u>("N/A")</u>	<u>N</u>	<u>N/A</u>
Other (specify)				

Vessel emission controls	<u>N</u>		<u>N</u>	
Mechanical loading or packaging equipment	<u>N</u>		<u>N</u>	
Other (specify)				

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Encapsulating / Potting

Work area 2

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
<u>NA</u>	

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Encapsulating / Potting
Work area 1

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>N</u>
Safety goggles/glasses	<u>Y</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Encapsulating / Potting

Work area 1

① Employee Follows Written Procedure

② Local Ventilation

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean-up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type Encapsulating / Potting

Work area 1

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	NA <u>NA</u>			
Vacuuming	<u>NA</u>			
Water flushing of floors	<u>NA</u>			
Other (specify)				
<u>Smell Wipe-Downs</u>	<u>✓</u>			

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Encapsulating / Potting

Work area 2

① Employee Follows Written Procedure

② Local Ventilation

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type 1

Work area 2

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	<u>NA</u>			
Vacuuming	<u>NA</u>			
Water flushing of floors	<u>NA</u>			
Other (specify)				
<u>Small Wipe-UPS</u>	<u>✓</u>			

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 10 ENVIRONMENTAL RELEASE

General Instructions:

Complete Part E (questions 10.23-10.35) for each non-routine release involving the listed substance that occurred during the reporting year. Report on all releases that are equal to or greater than the listed substance's reportable quantity value, RQ, unless the release is federally permitted as defined in 42 U.S.C. 9601, or is specifically excluded under the definition of release as defined in 40 CFR 302.3(22). Reportable quantities are codified in 40 CFR Part 302. If the listed substance is not a hazardous substance under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), thus, does not have an RQ, then report releases that exceed 2,270 kg. If such a substance, however, is designated as a CERCLA hazardous substance, then report those releases that equal to or greater than the RQ. The facility may have answered these questions or similar questions under the Agency's Accidental Release Information Program and may already have this information readily available. Assign a number to each release and use this number throughout this part to identify the release. Releases over more than a 24-hour period, not single releases, i.e., the release of a chemical substance equal to or greater than RQ must be reported as a separate release for each 24-hour period the release exceeds the RQ.

For questions 10.25-10.35, answer the questions for each release identified in question 10.23. Photocopy these questions and complete them separately for each release.

PART A GENERAL INFORMATION

10.01 Where is your facility located? Circle all appropriate responses.

CBI

- ☐ Industrial area
- ☒ Urban area
- ☒ Residential area
- Agricultural area
- Rural area
- Adjacent to a park or a recreational area
- Within 1 mile of a navigable waterway
- Within 1 mile of a school, university, hospital, or nursing home facility
- ☒ Within 1 mile of a non-navigable waterway
- Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

10.08 Describe the control technologies used to minimize release of the listed substance for each process stream containing the listed substance as identified in your process block or residual treatment block flow diagram(s). Photocopy this question and complete it separately for each process type.

CBI

☐

Process type

Encapsulating / Potting

<u>Stream ID Code</u>	<u>Control Technology</u>	<u>Percent Efficiency</u>
7C	None	NA
7D		
7E		
7G		
7I	↓	✓

☐

Mark (X) this box if you attach a continuation sheet.

10.11 Stack Parameters -- Identify the stack parameters for each Point Source ID Code identified in question 10.09 by completing the following table.

CBI

☐

("U.K.")

Point Source ID Code	Stack height(m)	Stack Inner Diameter (at outlet) (m)	Exhaust Temperature (°C)	Emission Exit Velocity (m/sec)	Building Height(m) ¹	Building Width(m) ²	Vent Type
E353	(U.K.)	(U.K.)	≈ 25	7.50	10	100	
E641	3	1					

¹ Height of attached or adjacent building

² Width of attached or adjacent building

³ Use the following codes to designate vent type:

H = Horizontal

V = Vertical

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operate process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separate for each process type.

CBI

☐

Process type

Percentage of time per year that the listed substance is exposed to this process type

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					Greater than 9
	Less than 5%	5-10%	11-25%	26-75%	76-99%	
Pump seals ¹						
Packed						
Mechanical						
Double mechanical ²						
Compressor seals ¹						
Flanges						
Valves						
Gas ³						
Liquid						
Pressure relief devices ⁴ (Gas or vapor only)						
Sample connections						
Gas						
Liquid						
Open-ended lines ⁵ (e.g., purge, vent)						
Gas						
Liquid						

NA

¹List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐

Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

☐

Process type

N/A

Equipment Type	Leak Detection	Detection Device	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repair Completed (days after initiate)
	Concentration (ppm or mg/m ³) Measured at _____ Inches from Source				
Pump seals					
Packed	_____	_____	_____	_____	_____
Mechanical	_____	_____	_____	_____	_____
Double mechanical	_____	_____	_____	_____	_____
Compressor seals	_____	_____	_____	_____	_____
Flanges	_____	_____	_____	_____	_____
Valves					
Gas	_____	_____	_____	_____	_____
Liquid	_____	_____	_____	_____	_____
Pressure relief devices (gas or vapor only)	_____	_____	_____	_____	_____
Sample connections					
Gas	_____	_____	_____	_____	_____
Liquid	_____	_____	_____	_____	_____
Open-ended lines					
Gas	_____	_____	_____	_____	_____
Liquid	_____	_____	_____	_____	_____

¹Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

O = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

PART E NON-ROUTINE RELEASES

10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

<u>Release</u>	<u>Date Started</u>	<u>Time (am/pm)</u>	<u>Date Stopped</u>	<u>Time (am/pm)</u>
1				
2				
3				
4				
5				
6				

NA

10.24 Specify the weather conditions at the time of each release.

<u>Release</u>	<u>Wind Speed (km/hr)</u>	<u>Wind Direction</u>	<u>Humidity (%)</u>	<u>Temperature (°C)</u>	<u>Precipitation (Y/N)</u>
1					
2					
3					
4					
5					
6					

☐ Mark (X) this box if you attach a continuation sheet.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Comprehensive Assessment Information Rule
REPORTING FORM

When completed, send this form to:

Document Processing Center
Office of Toxic Substances, TS-790
U.S. Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
Attention: CAIR Reporting Office

For Agency Use Only:

Date of Receipt: _____

Document
Control Number: _____

Docket Number: _____

1.03 Does the substance you are reporting on have an "x/p" designation associated with in the above-listed Federal Register Notice?
CBI
☐ Yes ☒ Go to question 1
☐ No ☐ Go to question 1

1.04 a. Do you manufacture, import, or process the listed substance and distribute it under a trade name(s) different than that listed in the Federal Register Notice. Circle the appropriate response.

CBI
☐ Yes
☒ No No

b. Check the appropriate box below:

☐ You have chosen to notify your customers of their reporting obligations

Provide the trade name(s) NA

☐ You have chosen to report for your customers

☐ You have submitted the trade name(s) to EPA one day after the effective date of the rule in the Federal Register Notice under which you are reporting.

1.05 If you buy a trade name product and are reporting because you were notified of your reporting requirements by your trade name supplier, provide that trade name.

CBI
☐ Trade name Eccofam FPH, Stebanfoam BH-614-T

Is the trade name product a mixture? Circle the appropriate response.

☒ Yes

No

1.06 Certification -- The person who is responsible for the completion of this form must sign the certification statement below:

CBI
☐ "I hereby certify that, to the best of my knowledge and belief, all information entered on this form is complete and accurate."

David Minerley
NAME

David Minerley
SIGNATURE

12/19/90
DATE SIGNED

Safety & Environ. Spec.
TITLE

(607) 770 - 2646
TELEPHONE NO.

☐ Mark (X) this box if you attach a continuation sheet.

1.11 Parent Company Identification

CBI Name [G][E][N][E][R][A][L][][E][L][E][C][T][R][I][C][][][][][][][][][][][][][][][][][]
[][] Address [C][O][C][][M][A][I][N][][S][T][][][][][][][][][][][][][][][][][]
Street
[J][O][H][N][S][O][N][][C][I][T][Y][][][][][][][][][][][][][][][][][]
City
[N][V] [1][3][7][9][0]--[][][]
State Zip
Dun & Bradstreet Number [C][O]-[2][2][3]-[5][1][8]

1.12 Technical Contact

CBI Name [D][A][V][I][D] [M][I][N][E][R][L][E][Y] [][][][][][][][][][][][][][][][]
[][] Title [S][A][F][E][T][Y] [J] [E][N][V][I][R][O][N][M][E][N][T] [S][P][E][C]. [][][][][][][][][][][][][][][][]
Address [C][O][C] [M][H][I][N] [S][T][R][E][E] [][][][][][][][][][][][][][][][]
Street
[J][O][H][N][S][O][N] [C][I][T][Y] [][][][][][][][][][][][][][][][]
City
[N][Y] [1][3][7][9] [][][][][][][][][][][][][][][][]
State Zip
Telephone Number [C][O][Z]-[7][7][C]-[2][C][C]

1.13 This reporting year is from 07 88 to 12 88
Mo. Year Mo. Ye

☐ Mark (X) this box if you attach a continuation sheet.

1.16 For each classification listed below, state the quantity of the listed substance was manufactured, imported, or processed at your facility during the reporting year

CBI

☐

Classification

Quantity (kg)

Manufactured NA

Imported NA

Processed (include quantity repackaged) 20.3

Of that quantity manufactured or imported, report that quantity:

In storage at the beginning of the reporting year NA

For on-site use or processing _____

For direct commercial distribution (including export) _____

In storage at the end of the reporting year _____

Of that quantity processed, report that quantity:

In storage at the beginning of the reporting year ("0")

Processed as a reactant (chemical producer) 0

Processed as a formulation component (mixture producer) 0

Processed as an article component (article producer) 20.3

Repackaged (including export) 0

In storage at the end of the reporting year ("0")

☐ Mark (X) this box if you attach a continuation sheet.

2.04 State the quantity of the listed substance that your facility manufactured, imported or processed during the 3 corporate fiscal years preceding the reporting year in descending order.

CBI

☐ Year ending ☐ ☒ ☐ ☐
Mo. Yea

Quantity manufactured NA

Quantity imported NA

Quantity processed ≈ 47

Year ending ☐ ☒ ☐ ☐
Mo. Yea

Quantity manufactured NA

Quantity imported NA

Quantity processed ≈ 33

Year ending ☐ ☒ ☐ ☐
Mo. Yea

Quantity manufactured NA

Quantity imported NA

Quantity processed ("U.K.")

2.05 Specify the manner in which you manufactured the listed substance. Circle all appropriate process types.

CBI

NA

☐ Continuous process

Semicontinuous process

Batch process

☐ Mark (X) this box if you attach a continuation sheet.

2.09 For the three largest volume manufacturing or processing process types involving listed substance, specify the number of days you manufactured or processed the listed substance during the reporting year. Also specify the average number of hours per day each process type was operated. (If only one or two operations are involved, list those.)

CBI

☐

Days/Year Average Hours/Day

Process Type #1 (The process type involving the largest quantity of the listed substance.)

Manufactured NA _____
 Processed ~250 8

Process Type #2 (The process type involving the 2nd largest quantity of the listed substance.)

Manufactured NA _____
 Processed NA _____

Process Type #3 (The process type involving the 3rd largest quantity of the listed substance.)

Manufactured NA _____
 Processed NA _____

2.10 State the maximum daily inventory and average monthly inventory of the listed substance that was stored on-site during the reporting year in the form of a bulk chemical.

CBI

☐

Maximum daily inventory [REDACTED]
 Average monthly inventory [REDACTED]

☐ Mark (X) this box if you attach a continuation sheet.

3.12 Existing Product Types -- List all existing product types which you manufactured, imported, or processed using the listed substance during the reporting year. List the quantity of listed substance you use for each product type as a percentage of total volume of listed substance used during the reporting year. Also list the quantity of listed substance used captively on-site as a percentage of the value listed under column b., and the types of end-users for each product type. (Refer to the instructions for further explanation and an example.)

CBI

☐

a. Product Types ¹	b. % of Quantity Manufactured, Imported, or Processed	c. % of Quantity Used Captively On-Site	d. Type of End-User
L	100%	0%	H

¹Use the following codes to designate product types:

A = Solvent	L = Moldable/Castable/Rubber and additives
B = Synthetic reactant	M = Plasticizer
C = Catalyst/Initiator/Accelerator/Sensitizer	N = Dye/Pigment/Colorant/Ink and additives
D = Inhibitor/Stabilizer/Scavenger/Antioxidant	O = Photographic/Reprographic chemical and additives
E = Analytical reagent	P = Electrodeposition/Plating chemicals
F = Chelator/Coagulant/Sequestrant	Q = Fuel and fuel additives
G = Cleanser/Detergent/Degreaser	R = Explosive chemicals and additives
H = Lubricant/Friction modifier/Antivear agent	S = Fragrance/Flavor chemicals
I = Surfactant/Emulsifier	T = Pollution control chemicals
J = Flame retardant	U = Functional fluids and additives
K = Coating/Binder/Adhesive and additives	V = Metal alloy and additives
	W = Rheological modifier
	X = Other (specify) _____

²Use the following codes to designate the type of end-users:

I = Industrial	CS = Consumer
CM = Commercial	H = Other (specify) <u>U.S. Government</u>

☐ Mark (X) this box if you attach a continuation sheet.

3.1- Final Product -- Complete the following table for each type of final product:
 CBI manufactured, imported, or processed at your facility that contains the listed
 substance other than as an impurity.

☐

a.	b.	c.	d.
Product Type ¹	Final Product's Physical Form ²	Average % Composition of Listed Substance in Final Product	Type of End-Users ³
	NA		

¹Use the following codes to designate product types:

- | | |
|--|---|
| A = Solvent | L = Moldable/Castable/Rubber and additi |
| B = Synthetic reactant | M = Plasticizer |
| C = Catalyst/Initiator/Accelerator/
Sensitizer | N = Dye/Pigment/Colorant/Ink and additi |
| D = Inhibitor/Stabilizer/Scavenger/
Antioxidant | O = Photographic/Reprographic chemical
and additives |
| E = Analytical reagent | P = Electrodeposition/Plating chemicals |
| F = Chelator/Coagulant/Sequestrant | Q = Fuel and fuel additives |
| G = Cleanser/Detergent/Degreaser | R = Explosive chemicals and additives |
| H = Lubricant/Friction modifier/Antivear
agent | S = Fragrance/Flavor chemicals |
| I = Surfactant/Emulsifier | T = Pollution control chemicals |
| J = Flame retardant | U = Functional fluids and additives |
| K = Coating/Binder/Adhesive and additives | V = Metal alloy and additives |
| | W = Rheological modifier |
| | X = Other (specify) _____ |

²Use the following codes to designate the final product's physical form:

- | | |
|----------------------|---------------------------|
| A = Gas | F2 = Crystalline solid |
| B = Liquid | F3 = Granules |
| C = Aqueous solution | F4 = Other solid |
| D = Paste | G = Gel |
| E = Slurry | H = Other (specify) _____ |
| F1 = Powder | |

³Use the following codes to designate the type of end-users:

- | | |
|-----------------|---------------------------|
| I = Industrial | CS = Consumer |
| CM = Commercial | H = Other (specify) _____ |

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 3 PROCESSOR RAW MATERIAL IDENTIFICATION

PART A GENERAL DATA

3.01 Specify the quantity purchased and the average price paid for the listed substance for each major source of supply listed. Product trades are treated as purchases. CBI The average price is the market value of the product that was traded for the listed substance.

☐

Source of Supply

Quantity
(kg)

Average Price
(\$/kg)

The listed substance was manufactured on-site.

The listed substance was transferred from a different company site.

The listed substance was purchased directly from a manufacturer or importer.

The listed substance was purchased from a distributor or repackager.

The listed substance was purchased from a mixture producer.

20.3

("U.K.")

3.02 Circle all applicable modes of transportation used to deliver the listed substance CBI your facility.

☐

Truck

Railcar

Barge, Vessel

Pipeline

Plane

Other (specify)

☐ Mark (X) this box if you attach a continuation sheet.

PART B RAW MATERIAL IN THE FORM OF A MIXTURE

3.04 If you obtain the listed substance in the form of a mixture, list the trade name(s) of the mixture, the name of its supplier(s) or manufacturer(s), an estimate of the average percent composition by weight of the listed substance in the mixture, and amount of mixture processed during the reporting year.

CBI

(一)

<u>Trade Name</u>	<u>Supplier or Manufacturer</u>	<u>Average % Composition by Weight (specify - % precision)</u>	<u>Amount Processed (kg yr)</u>
<u>Eccofam FPH</u>	<u>Emerson-Cummings</u>	<u>25-35%</u>	<u>10</u>
<u>Stapanfoam BH-614-T</u>	<u>Stepan Co.</u>	<u>74%</u>	<u>22.7</u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>	<u> </u>

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 4 PHYSICAL/CHEMICAL PROPERTIES

General Instructions:

If you are reporting on a mixture as defined in the glossary, reply to questions in Section 4 that are inappropriate to mixtures by stating "NA -- mixture."

For questions 4.06-4.15, if you possess any hazard warning statement, label, MSDS, or other notice that addresses the information requested, you may submit a copy or reasonable facsimile in lieu of answering those questions which it addresses.

PART A PHYSICAL/CHEMICAL DATA SUMMARY

- 4.01 Specify the percent purity for the three major¹ technical grade(s) of the listed substance as it is manufactured, imported, or processed. Measure the purity of the substance in the final product form for manufacturing activities, at the time you import the substance, or at the point you begin to process the substance.

CBI

☐

("NA-Mixture")

	<u>Manufacture</u>	<u>Import</u>	<u>Process</u>
Technical grade #1	_____ % purity	_____ % purity	_____ % purity
Technical grade #2	_____ % purity	_____ % purity	_____ % purity
Technical grade #3	_____ % purity	_____ % purity	_____ % purity

¹Major = Greatest quantity of listed substance manufactured, imported or processed.

- 4.02 Submit your most recently updated Material Safety Data Sheet (MSDS) for the listed substance, and for every formulation containing the listed substance. If you possess an MSDS that you developed and an MSDS developed by a different source, submit your version. Indicate whether at least one MSDS has been submitted by circling the appropriate response.

☒ Yes

No

Indicate whether the MSDS was developed by your company or by a different source.

Your company

☒ Another source

☒ Mark (X) this box if you attach a continuation sheet.

Continued directly following this page

5

O.K MAR 08 1990

NF 00956 01

MATERIAL SAFETY DATA SHEET

DATE: 03/02/90 CUST # 39795-701 P.O.# 34929 PAGE:
PRODUCT NUMBER: 188478 PRODUCT NAME: STEPANFOAM BH-614-T

TOLUENE-2,4-DIISOCYANATE (TDI) (C) (584-84-9)	0.005	0.005	SARA 313
74%			
TOLUENE-2,6-DIISOCYANATE (TDI) (C) (91-08-7)	0.005	0.005	SARA 313
18%			

NE = NOT ESTABLISHED.
NL = NOT LISTED.
(C) = IDENTIFIED AS A CARCINOGEN BY OSHA, IARC, OR NTP.

* SECTION III: PHYSICAL/CHEMICAL DATA

BOILING POINT:
OVER 200 DEG F. (93 DEG C.).
% VOLATILE BY WEIGHT:
NIL
EVAPORATION RATE: ESTIMATED SLOWER THAN ETHYL ETHER.

VAPOR DENSITY: ESTIMATED HEAVIER THAN AIR.
WEIGHT PER GALLON:
10.0 LBS.

* SECTION IV: FIRE AND EXPLOSION DATA

FLASH POINT (SETA FLASH CLOSED CUP):
OVER 200 DEG F. (93 DEG C.).
EXPLOSIVE LIMITS:
LOWER:
1%
EXTINGUISHING MEDIA: DRY CHEMICAL, CARBON DIOXIDE, FOAM, OR
WATER FOG. CLASS BC, ABC FIRE EXTINGUISHER.
SPECIAL FIRE FIGHTING PROCEDURES: SELF-CONTAINED POSITIVE PRESSURE
BREATHING APPARATUS AND PROTECTIVE
CLOTHING SHOULD BE WORN IN FIGHT-
ING FIRES INVOLVING CHEMICALS.
UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE KNOWN.

* SECTION V: REACTIVITY DATA

STABILITY: STABLE
HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

(CONTINUED)

DATE: 03/02/90

CUST # 39795-701

P.O.# 34929

PAGE:

PRODUCT NUMBER: 188478

PRODUCT NAME: STEPANFOAM BH-614-T

SMALL SPILLS: SOAK UP WITH ABSORBANT, SHOVEL INTO WASTE CONTAINER,
FLUSH AREA WITH WATER.

LARGE SPILLS: RECOVER LIQUID FOR REPROCESSING OR DISPOSAL.

WASTE DISPOSAL: RECOVER MATERIAL OR DISPOSE (INCINERATION IS
PREFERRED) IN ACCORDANCE WITH ALL APPLICABLE FEDERAL,
STATE, AND LOCAL REGULATIONS. MATERIAL COLLECTED WITH
ABSORBANT MAY BE DISPOSED IN A PERMITTED LANDFILL IN
ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS.
EMPTY CONTAINER MAY RETAIN VAPOR OR PRODUCT RESIDUE.
OBSERVE ALL LABELED SAFEGUARDS UNTIL CONTAINER IS
CLEANED, RECONDITIONED, OR DESTROYED.

* SECTION VIII: PROTECTIVE MEASURES

EYE PROTECTION: WEAR FULL FACE SHIELD OR GOGGLES WHEN HANDLING.

PROTECTIVE GLOVES: USE IMPERVIOUS GLOVES.

RESPIRATORY PROTECTION:

IF VAPORS ARE PRESENT, USE NIOSH OR MSHA APPROVED RESPIRATOR FOR
ORGANIC VAPORS, AIR-LINE RESPIRATOR, OR A SELF-CONTAINED
BREATHING APPARATUS.

VENTILATION:

USE VENTILATION ADEQUATE TO KEEP HAZARDOUS INGREDIENTS BELOW
THEIR TLV (SEE SECTION II).

OTHER PROTECTIVE EQUIPMENT:

WEAR PROTECTIVE CLOTHING TO PREVENT REPEATED OR PROLONGED
CONTACT.

EYE WASH STATION AND SAFETY SHOWER SHOULD BE NEAR WORK AREA.

* SECTION IX: SPECIAL PRECAUTIONS

HANDLING AND STORAGE:

AVOID OVERHEATING OR FREEZING.

AVOID OPEN FIRE OR FLAME.

OTHER PRECAUTIONS:

SPILLED MATERIAL IS SLIPPERY. WASH THOROUGHLY AFTER HANDLING. IF
INGESTED, CALL A PHYSICIAN.

DO NOT POUR INTO DRAINS, AS SOLIDS THAT FORM WILL PLUG SEWERS.
1% AMMONIA MAY BE USED TO NEUTRALIZE SPILLS.

NEITHER THIS DATA SHEET NOR ANY STATEMENT CONTAINED HEREIN GRANTS OR EXTENDS
ANY LICENSE, EXPRESS OR IMPLIED, IN CONNECTION WITH PATENTS ISSUED OR PENDING
WHICH MAY BE THE PROPERTY OF THE MANUFACTURER OR OTHERS. THE INFORMATION IN
(CONTINUED)

MSDS-330005

TDI U223

EMERSON AND CUMING, INC.

A GRACE CO.

77 DRAGON COURT,

WOBURN, MA 01888

EMERGENCY/SAFETY INFORMATION: (617) 935-4850

OR: (617) 938-8630

ADDITIONAL MSDS: (617) 823-3300

MSDS PREPARED BY: DAVID NAAS

DATE PREPARED: 01/30/89

SUPERCEDES: 09/11/84

DOCUMENT #: 330005

SECTION I - IDENTIFICATION

PRODUCT (TRADE) NAME: ECCOFDAM FPH

GENERAL CHEMICAL DESCRIPTION: ISOCYANATE PREPOLYMER

SECTION II - INGREDIENTS

COMPONENTS	PERCENT BY WEIGHT	MAXIMUM EXPOSURE LIMITS (8 HOUR TIME-WEIGHTED AVERAGE):	
		OSHA PEL	ACGIH TLV
TOLUENE-DIISOCYANATE-BASED PREPOLYMER	65-75%	NOT ESTABLISHED	
TOLUENE DIISOCYANATE(*) (CAS# 584-84-9)	25-35%	0.02PPM	0.005PPM

SEE "HEALTH HAZARD DATA"

(*) THIS MATERIAL IS REGULATED BY THE SARA SECTION 313 AMENDMENTS TO RCRA.

SECTION III - PHYSICAL DATA

BOILING POINT (°F): > 200

VAPOR PRESSURE AT 25°C: < 1 MM HG

VOLATILES (% BY WEIGHT): NEGLIGIBLE

APPEARANCE AND COLOR: RED LIQUID

SPECIFIC GRAVITY (WATER=1): 1.30

SOLUBILITY IN WATER: REACTS WITH WATER

VAPOR DENSITY: HEAVIER THAN AIR

ECCOFOAM FPH

SECTION VI-SPILL OR LEAK PROCEDURES

NOTE: PROTECTIVE GLOVES, CLOTHING, RESPIRATORY PROTECTION AND CHEMICAL SPLASH GOGGLES MUST BE WORN DURING ENTIRE CLEAN-UP PROCEDURE.

FOR SMALL SPILLS: TURN ON VENTILATION EQUIPMENT TO EVACUATE VAPORS FROM THE AREA. WIPE UP, OR ABSORB WITH VERMICULITE OR OTHER ABSORBENT MATERIAL.

COLLECT WASTE IN SEALED CONTAINERS.

SCRUB AREA WITH SOAPY WATER AND RINSE. PREVENT RINSES FROM ENTERING DRAINS OR OTHER WATERWAYS.

SPILLED MATERIAL AND WATER RINSES SHOULD BE DISPOSED OF AS CHEMICAL WASTE IN ACCORDANCE WITH ALL CURRENT FEDERAL, STATE, AND LOCAL REGULATIONS.

FOR LARGE SPILLS: TURN ON VENTILATION EQUIPMENT TO EVACUATE VAPORS FROM THE AREA. NON-ESSENTIAL PERSONNEL SHOULD BE EVACUATED FROM IMMEDIATE AREA.

DIKE AREA TO CONTAIN SPILLED MATERIAL AND TO PREVENT RUNOFF INTO DRAINS, SEWERS, AND OTHER WATERWAYS.

SHOVEL OR PUMP TO DRUM OR SALVAGE TANK.

ABSORB RESIDUAL MATERIAL WITH SAND, VERMICULITE, OR OTHER ABSORBENT MATERIAL.

SCRAPE OR SHOVEL ABSORBED WASTE AND ABSORBENT INTO CONTAINERS.

THOROUGHLY SCRUB RESIDUAL MATERIAL OF AQUEOUS 1% AMMONIA AND 5% ISOPROPANOL.

COLLECT WATER RINSES IN D.O.T.-APPROVED CONTAINERS, SEPARATE FROM MATERIAL ABSORBED WITH VERMICULITE.

POLYMERIZED MATERIAL MAY BE SCRAPED UP AND DISPOSED OF SEPARATELY.

SPILLED MATERIAL AND WATER RINSES SHOULD BE DISPOSED OF AS CHEMICAL WASTE IN ACCORDANCE WITH ALL CURRENT FEDERAL, STATE, AND LOCAL REGULATIONS.

SECTION VII-SPECIAL PRECAUTIONS

PERSONAL PROTECTION: AVOID SKIN AND EYE CONTACT. WEAR GLOVES AND PROTECTIVE CLOTHING TO PREVENT EXPOSURE. AVOID BREATHING VAPORS. USE ONLY WITH ADEQUATE VENTILATION.

STORAGE: STORE IN COOL, DRY PLACE; KEEP REMOVED FROM ANY HEAT OR OPEN FLAME.

DO NOT EXPOSE TO MOISTURE; MOISTURE WILL MAKE PRODUCT UNUSABLE.

KEEP CONTAINER CLOSED WHEN NOT IN USE.

VENTILATION REQUIREMENTS: FLEXIBLE DUCTWORK SHOULD EXTEND TO AREAS OF HIGH CONCENTRATION TO PREVENT LOCAL BUILDUP OF VAPOR. NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS SHOULD BE USED IN THE ABSENCE OF MECHANICAL VENTILATION WHEN WORKING WITH LARGE QUANTITIES OF MATERIAL.

FLAMMABILITY/EXPLOSION PRECAUTIONS: KEEP AWAY FROM INTENSE HEAT, OPEN FLAMES.

- 4.03 Submit a copy or reasonable facsimile of any hazard information (other than an MSDS) that is provided to your customers/users regarding the listed substance or any formulation containing the listed substance. Indicate whether this information has been submitted by circling the appropriate response.

Yes

☐ No ☒ NA

- 4.04 For each activity that uses the listed substance, circle all the applicable number corresponding to each physical state of the listed substance during the activity listed. Physical states for importing and processing activities are determined at the time you import or begin to process the listed substance. Physical states for manufacturing, storage, disposal and transport activities are determined using the final state of the product.

CBI

☐

Activity	Physical State			
	Solid	Slurry	Liquid	Liquified Gas
Manufacture	1	2	3	4
Import	1	2	3	4
Process	1	2	<u>3</u>	4
Store	1	2	3	4
Dispose	1	2	3	4
Transport	1	2	3	4

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 5 ENVIRONMENTAL FATE

PART A RATE CONSTANTS AND TRANSFORMATION PRODUCTS

5.01 Indicate the rate constants for the following transformation processes.

a. Photolysis:

Absorption spectrum coefficient (peak) ("U.K.") (1/M cm) at _____ nm

Reaction quantum yield, ϕ ("U.K.") at _____ nm

Direct photolysis rate constant, k_p , at ... ("U.K.") 1/hr _____ latitude

b. Oxidation constants at 25°C:

For 1O_2 (singlet oxygen), k_{ox} ("U.K.") 1/

For RO_2 (peroxy radical), k_{ox} ("U.K.") 1/

c. Five-day biochemical oxygen demand, BOD_5 , ... ("U.K.") mg

d. Biotransformation rate constant:

For bacterial transformation in water, k_b ... ("U.K.") 1/

Specify culture ("U.K.")

e. Hydrolysis rate constants:

For base-promoted process, k_b ("U.K.") 1/

For acid-promoted process, k_a ("U.K.") 1/

For neutral process, k_n ("U.K.") 1/

f. Chemical reduction rate (specify conditions) ("U.K.")

g. Other (such as spontaneous degradation) ... ("U.K.")

☐ Mark (X) this box if you attach a continuation sheet.

5.07 List the bioconcentration factor (BCF) of the listed substance, the species for which it was determined, and the type of test used in deriving the BCF.

Bioconcentration Factor

Species

Test

("U.K.")

Use the following codes to designate the type of test:

F = Flowthrough

S = Static

☐ Mark (X) this box if you attach a continuation sheet.

7.03 In accordance with the instructions, provide a process block flow diagram showing process emission streams and emission points that contain the listed substance and which, if combined, would total at least 90 percent of all facility emissions if not treated before emission into the environment. If all such emissions are released from one process type, provide a process block flow diagram using the instructions for question 7.01. If all such emissions are released from more than one process type, provide a process block flow diagram showing each process type as a separate block.

BI

☐ Process type Encapsulating / Potting

(7B, 7.2) → (7C) Spent Container

(7B), (7.2), (7.3),
(7.4), (7.5) → (7I) Area Ventilation

(7.5) → (7G) Oven Vent

(7.3) → (7D) Spent Container

(7.4) → (7E) Spent Container

☐ Mark (X) this box if you attach a continuation sheet.

7.04 Describe the typical equipment types for each unit operation identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type.

CBI

☐ Process type Encapsulating / Potting

Unit Operation ID Number	Typical Equipment Type	Operating Temperature Range (°C)	Operating Pressure Range (mm Hg)	Vessel Composit
<u>7.1</u>	<u>Paper Cup</u>	<u>Room</u>	<u>Room</u>	<u>Paper</u>
<u>7.2</u>	<u>Paper Cup</u>	<u>Room</u>	<u>Room</u>	<u>Paper</u>
<u>7.3</u>	<u>Paper Cup</u>	<u>Room</u>	<u>Room</u>	<u>Paper</u>
<u>7.4</u>	<u>Mold</u>	<u>Room</u>	<u>Room</u>	<u>RTV, A</u>
<u>7.5</u>	<u>Oven</u>	<u>110 ± 5°</u>	<u>Room</u>	<u>Steel</u>

☐ Mark (X) this box if you attach a continuation sheet.

7.06 Characterize each process stream identified in your process block flow diagram(s). If a process block flow diagram is provided for more than one process type, photocopy this question and complete it separately for each process type. (Refer to the CBI instructions for further explanation and an example.)

☐ Process type Encapsulating / Potting

a.	b.	c.	d.	e.
Process Stream ID Code	Known Compounds ¹	Concentrations ^{2,3} (% or ppm)	Other Expected Compounds	Estimated Concentration (% or ppm)
7A	BH614-SS-R	100%	None	NA
7B	BH614-T	100%	2,4-TDI	74%
			2,6-TDI	18%
7C	BH-614-T	100%	2,4-TDI	74%
			2,6-TDI	18%
7D	Mixed Resin	100%	None	NA
7E	Solidified Resin	100%	Ammonia	("OK")
7F	NA	NA	NA	NA
7G	Isocyanates	("OK")	NA	NA
	Ammonia	("OK")	NA	NA
7H	NA	NA	NA	NA
7I	Isocyanates	("OK")	NA	NA

7.06 continued below

☐ Mark (X) this box if you attach a continuation sheet.

SECTION 8 RESIDUAL TREATMENT GENERATION, CHARACTERIZATION, TRANSPORTATION, AND
MANAGEMENT

General Instructions:

For questions 8.04-8.06, provide a separate response for each residual treatment block flow diagram provided in question 8.01, 8.02 or 8.03. Identify the process type from which the information is extracted.

For questions 8.05-8.33, the Stream Identification Codes are those process streams listed in either the Section 7 or Section 8 block flow diagrams which contain residuals for each applicable waste management method.

For questions 8.07-8.33, if residuals are combined before they are handled, list those Stream Identification Codes on the same line.

Questions 8.09-8.33 refer to the waste management activities involving the residuals identified in either the Section 7 or Section 8 block flow diagrams. Not all Stream Identification Codes used in the sample answers (e.g., for the incinerator questions) have corresponding process streams identified in the block flow diagram(s). These Stream Identification codes are for illustrative purposes only.

For questions 8.11-8.33, if you have provided the information requested on one of the EPA Office of Solid Waste surveys listed below within the three years prior to your reporting year, you may submit a copy or reasonable facsimile in lieu of answering those questions which the survey addresses. The applicable surveys are: (1) Hazardous Waste Treatment, Storage, Disposal, and Recycling Survey; (2) Hazardous Waste Generator Survey; or (3) Subtitle D Industrial Facility Mail Survey.

☐ Mark (X) this box if you attach a continuation sheet.

PART B RESIDUAL GENERATION AND CHARACTERIZATION

8.05 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

☐ Process type Encapsulating / Potting

a.	b.	c.	d.	e.	f.	g.
Stream ID Code	Type of Hazardous Waste	Physical State of Residual ²	Known Compounds ³	Concentrations (% or ppm) ^{4,5,6}	Other Expected Compounds	Estimated Concentrations (% or ppm)
<u>7C</u>	<u>H, B, T, E</u>	<u>OL</u>	<u>2,4-TDI</u>	<u>74%</u>	<u>("OK")</u>	<u>("OK")</u>
			<u>2,6-TDI</u>	<u>18%</u>	<u>("OK")</u>	<u>("OK")</u>
7D	T	OL	2,4-TDI	74%	("OK")	("OK")
			2,6-TDI	18%	("OK")	("OK")
7E	NA	SC	2,4-TDI	74%	NT	NA

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

³ For each additive package introduced into a process stream, specify the compounds that are present in each additive package, and the concentration of each compound. Assign an additive package number to each additive package and list this number in column d. (Refer to the instructions for further explanation and an example. Refer to the glossary for the definition of additive package.)

Additive Package Number	Components of Additive Package	Concentrations (% or ppm)
1		
2		
3		
4		
5		

NA

⁴ Use the following codes to designate how the concentration was determined:

- A = Analytical result
E = Engineering judgement/calculation

8.05 continued below

☐ Mark (X) this box if you attach a continuation sheet.

- 8.06 Characterize each process stream identified in your residual treatment block flow diagram(s). If a residual treatment block flow diagram is provided for more than process type, photocopy this question and complete it separately for each process type. (Refer to the instructions for further explanation and an example.)

CBI

☐ Process type Encapsulating / Potting

a.	b.	c.	d.	e.		f.	g.
Stream ID Code	Waste Description Code	Management Method Code ²	Residual Quantities (kg/yr)	Management of Residual (%)		Costs for Off-Site Management (per kg)	Changes Management Method
On-Site	Off-Site						
<u>7C</u>	<u>B67/B69</u>	<u>1ST</u>	<u>.237</u>	<u>100%</u>		<u>("U.K.")</u>	<u>NA</u>
<u>7D</u>	<u>B67/B69</u>	<u>1ST</u>	<u>("U.K.")</u>	<u>100%</u>		<u>("U.K.")</u>	<u>NA</u>
<u>7E</u>	<u>Bx2</u>	<u>1ST</u>	<u>("U.K.")</u>	<u>100%</u>		<u>("U.K.")</u>	

¹Use the codes provided in Exhibit 8-1 to designate the waste descriptions

²Use the codes provided in Exhibit 8-2 to designate the management methods

☐ Mark (X) this box if you attach a continuation sheet.

EXHIBIT 8-2.
(Refers to question 8.06(c))

MANAGEMENT METHODS

- M1 = Discharge to publicly owned wastewater treatment works
- M2 = Discharge to surface water under NPDES
- M3 = Discharge to off-site, privately owned wastewater treatment works
- M4 = Scrubber: a) caustic; b) water; c) other
- M5 = Vent to: a) atmosphere; b) flare; c) other (specify) _____
- M6 = Other (specify) _____

TREATMENT AND RECYCLING

Incineration/thermal treatment

- 1I Liquid injection
- 2I Rotary or rocking kiln
- 3I Rotary kiln with a liquid injection unit
- 4I Two stage
- 5I Fixed hearth
- 6I Multiple hearth
- 7I Fluidized bed
- 8I Infrared
- 9I Fume/vapor
- 10I Pyrolytic destructor
- 11I Other incineration/thermal treatment

Reuse as fuel

- 1RF Cement kiln
- 2RF Aggregate kiln
- 3RF Asphalt kiln
- 4RF Other kiln
- 5RF Blast furnace
- 6RF Sulfur recovery furnace
- 7RF Smelting, melting, or refining furnace
- 8RF Coke oven
- 9RF Other industrial furnace
- 10RF Industrial boiler
- 11RF Utility boiler
- 12RF Process heater
- 13RF Other reuse as fuel unit

Fuel Blending

- 1FB Fuel blending

Solidification

- 1S Cement or cement/silicate processes
- 2S Pozzolanic processes
- 3S Asphaltic processes
- 4S Thermoplastic techniques
- 5S Organic polymer techniques
- 6S Jacketing (macro-encapsulation)
- 7S Other solidification

Recovery of solvents and liquid organics for reuse

- 1SR Fractionation
- 2SR Batch still distillation
- 3SR Solvent extraction
- 4SR Thin-film evaporation
- 5SR Filtration
- 6SR Phase separation
- 7SR Dessication
- 8SR Other solvent recovery

Recovery of metals

- 1MR Activated carbon (for metals recovery)
- 2MR Electrodialysis (for metals recovery)
- 3MR Electrolytic metal recovery
- 4MR Ion exchange (for metals recovery)
- 5MR Reverse osmosis (for metals recovery)
- 6MR Solvent extraction (for metals recovery)
- 7MR Ultrafiltration (for metals recovery)
- 8MR Other metals recovery

Wastewater Treatment

After each wastewater treatment type listed below (1WT - 66WT) specify a) tank; or b) surface impoundment (i.e., 63WTa)

Equalization

- 1WT Equalization

Cyanide oxidation

- 2WT Alkaline chlorination
- 3WT Ozone
- 4WT Electrochemical
- 5WT Other cyanide oxidation

General oxidation (including disinfection)

- 6WT Chlorination
- 7WT Ozonation
- 8WT UV radiation
- 9WT Other general oxidation

Chemical precipitation¹

- 10WT Lime
- 11WT Sodium hydroxide
- 12WT Soda ash
- 13WT Sulfide
- 14WT Other chemical precipitation

Chromium reduction

- 15WT Sodium bisulfite
- 16WT Sulfur dioxide

8.22 Describe the combustion chamber design parameters for each of the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

☐

Incinerator	Combustion Chamber Temperature (°C)		Location of Temperature Monitor		Residence Time In Combustion Chamber (seconds)	
	Primary	Secondary	Primary	Secondary	Primary	Secondary
1						
2						
3						

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes

No

8.23 Complete the following table for the three largest (by capacity) incinerators that are used on-site to burn the residuals identified in your process block or residual treatment block flow diagram(s).

CBI

☐

Incinerator	Air Pollution Control Device ¹	Types of Emissions Data Available
1	NA	
2		
3		

Indicate if Office of Solid Waste survey has been submitted in lieu of response by circling the appropriate response.

Yes

No

¹Use the following codes to designate the air pollution control device:

S = Scrubber (include type of scrubber in parenthesis)

E = Electrostatic precipitator

O = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

PART A EMPLOYMENT AND POTENTIAL EXPOSURE PROFILE

9.01 Mark (X) the appropriate column to indicate whether your company maintains records of the following data elements for hourly and salaried workers. Specify for each data element the year in which you began maintaining records and the number of years the records for that data element are maintained. (Refer to the instructions for further explanation and an example.)

CBI

☐

Data Element	Data are Maintained for:		Year in Which Data Collection Began	Number of Years Records Are Maintained
	Hourly Workers	Salaried Workers		
Date of hire	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Age at hire	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Work history of individual before employment at your facility	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Sex	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Race	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Job titles	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Start date for each job title	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
End date for each job title	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Work area industrial hygiene monitoring data	<u>X</u>	<u>X</u>	<u>("U.K.")</u>	<u>Permanent</u>
Personal employee monitoring data	<u>X</u>	<u>X</u>	<u>("U.K.")</u>	<u>Permanent</u>
Employee medical history	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Employee smoking history	<u>X</u>	<u>X</u>	<u>1980</u>	<u>Permanent</u>
Accident history	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Retirement date	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Termination date	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>
Vital status of retirees	<u>X</u>	<u>X</u>	<u>("U.K.")</u>	<u>N.A.</u>
Cause of death data	<u>X</u>	<u>X</u>	<u>1949</u>	<u>Permanent</u>

☐ Mark (X) this box if you attach a continuation sheet.

9.03 Provide a descriptive job title for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance.

CBI

☐

Labor Category

Descriptive Job Title

A

Painting Operator

B

~~Assembly Worker~~

C

D

E

F

G

H

I

J

☐ Mark (X) this box if you attach a continuation sheet.

9.05 Describe the various work area(s) shown in question 9.04 that encompass workers who may potentially come in contact with or be exposed to the listed substance. Add additional areas not shown in the process block flow diagram in question 7.01 or 7.02. Photocopy this question and complete it separately for each process type.

CBI

☐ Process type Encapsulating / Potting

Work Area ID

Description of Work Areas and Worker Activities

1

Hooded Work Station (Mix & Pour)

2

Vented Oven (Bake)

3

4

5

6

7

8

9

10

☐ Mark (X) this box if you attach a continuation sheet.

- 9.06 Complete the following table for each work area identified in question 9.05. and for each labor category at your facility that encompasses workers who may potentially come in contact with or be exposed to the listed substance. Photocopy this question and complete it separately for each process type and work area.

☐ CBI Process type Encapsulating / Potting

Work area 2

Labor Category	Number of Workers Exposed	Mode of Exposure (e.g., direct skin contact)	Physical State of Listed Substance ¹	Average Length of Exposure Per Day ²	Number of Days per Year Exposed
<u>A</u>	<u>5</u>	<u>Skin/Inhalation</u>	<u>OL</u>	<u>B, C</u>	<u>(100%)</u>

¹Use the following codes to designate the physical state of the listed substance at the point of exposure:

GC = Gas (condensable at ambient temperature and pressure)	SY = Sludge or slurry
GU = Gas (uncondensable at ambient temperature and pressure; includes fumes, vapors, etc.)	AL = Aqueous liquid
SO = Solid	OL = Organic liquid
	IL = Immiscible liquid (specify phases, e.g., 90% water, 10% toluene)

²Use the following codes to designate average length of exposure per day:

A = 15 minutes or less	D = Greater than 2 hours, but not exceeding 4 hours
B = Greater than 15 minutes, but not exceeding 1 hour	E = Greater than 4 hours, but not exceeding 8 hours
C = Greater than one hour, but not exceeding 2 hours	F = Greater than 8 hours

☐ Mark (X) this box if you attach a continuation sheet.

9.07 For each labor category represented in question 9.06, indicate the 8-hour Time Weighted Average (TWA) exposure levels and the 15-minute peak exposure levels. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Encapsulating / Potting

Work area 1

<u>Labor Category</u>	<u>8-hour TWA Exposure Level (ppm, mg/m³, other-specify)</u>	<u>15-Minute Peak Exposure Lev (ppm, mg/m³, other-specify)</u>
<u>A</u>	<u>("UK")</u>	<u>("UK")</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART B WORK PLACE MONITORING PROGRAM

9.08 If you monitor worker exposure to the listed substance, complete the following table

CBI

☐

NA

<u>Sample/Test</u>	<u>Work Area ID</u>	<u>Testing Frequency (per year)</u>	<u>Number of Samples (per test)</u>	<u>Who Samples¹</u>	<u>Analyzed In-House (Y/N)</u>	<u>Number of Years Records Maintained</u>
Personal breathing zone						
General work area (air)						
Wipe samples						
Adhesive patches						
Blood samples						
Urine samples						
Respiratory samples						
Allergy tests						
Other (specify)						
Other (specify)						
Other (specify)						

¹Use the following codes to designate who takes the monitoring samples:

A = Plant industrial hygienist

B = Insurance carrier

C = OSHA consultant

D = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

9.11 If you conduct routine medical tests for monitoring the health effects of exposure the listed substance, specify the type and frequency of the tests.

CBI

☐

Test Description

NA

Frequency
(weekly, monthly, yearly, etc.)

☐ Mark (X) this box if you attach a continuation sheet.

PART C ENGINEERING CONTROLS

9.12 Describe the engineering controls that you use to reduce or eliminate worker exposure to the listed substance. Photocopy this question and complete it separately for each process type and work area.

CBI

1) Process type Encapsulating / Potting

Work area

<u>Engineering Controls</u>	<u>Used (Y/N)</u>	<u>Year Installed</u>	<u>Upgraded (Y/N)</u>	<u>Year Upgrade</u>
Ventilation:				
Local exhaust	<u>Y</u>	<u>("U.K.")</u>	<u>N</u>	<u>NA</u>
General dilution	<u>Y</u>	<u>("U.K.")</u>	<u>N</u>	<u>NA</u>
Other (specify) _____				
Vessel emission controls	<u>N</u>	<u>N</u>		
Mechanical loading or packaging equipment	<u>N</u>	<u>Y</u>		
Other (specify) _____				

☐ Mark (X) this box if you attach a continuation sheet.

9.13 Describe all equipment or process modifications you have made within the 3 years prior to the reporting year that have resulted in a reduction of worker exposure to the listed substance. For each equipment or process modification described, state the percentage reduction in exposure that resulted. Photocopy this question and complete it separately for each process type and work area.

CBI

☐ Process type Encapsulating / Potting

Work area 1

Equipment or Process Modification	Reduction in Worker Exposure Per Year (%)
<u>NA</u>	

☐ Mark (X) this box if you attach a continuation sheet.

PART D PERSONAL PROTECTIVE AND SAFETY EQUIPMENT

9.14 Describe the personal protective and safety equipment that your workers wear or use in each work area in order to reduce or eliminate their exposure to the listed substance. Photocopy this question and complete it separately for each process and work area.

CBI

☐ Process type Encapsulating / Potting
Work area 2

<u>Equipment Types</u>	<u>Wear or Use (Y/N)</u>
Respirators	<u>N</u>
Safety goggles/glasses	<u>Y</u>
Face shields	<u>N</u>
Coveralls	<u>N</u>
Bib aprons	<u>N</u>
Chemical-resistant gloves	<u>Y</u>
Other (specify)	
_____	_____
_____	_____

☐ Mark (X) this box if you attach a continuation sheet.

PART E WORK PRACTICES

- 9.19 Describe all of the work practices and administrative controls used to reduce or eliminate worker exposure to the listed substance (e.g., restrict entrance only to authorized workers, mark areas with warning signs, insure worker detection and monitoring practices, provide worker training programs, etc.). Photocopy this question and complete it separately for each process type and work area.

CBI

☐

Process type Encapsulating / Potting

Work area 1

(1) Employee Follows Written Procedure

(2) Local Ventilation

- 9.20 Indicate (X) how often you perform each housekeeping task used to clean up routine leaks or spills of the listed substance. Photocopy this question and complete it separately for each process type and work area.

Process type Encapsulating / Potting

Work area 1

<u>Housekeeping Tasks</u>	<u>Less Than Once Per Day</u>	<u>1-2 Times Per Day</u>	<u>3-4 Times Per Day</u>	<u>More Than 4 Times Per Day</u>
Sweeping	NA <u>NA</u>			
Vacuuming	<u>NA</u>			
Water flushing of floors	<u>NA</u>			
Other (specify)				
<u>Small Wipe-Ups</u>	<u>✓</u>			

☐ Mark (X) this box if you attach a continuation sheet.

9.21 Do you have a written medical action plan for responding to routine or emergency exposure to the listed substance?

Routine exposure

Yes

No

Emergency exposure

Yes

No

If yes, where are copies of the plan maintained?

Routine exposure:

Emergency exposure:

9.22 Do you have a written leak and spill cleanup plan that addresses the listed substance? Circle the appropriate response.

☒ Yes

No

If yes, where are copies of the plan maintained? MSDS In Foreman's Office

Has this plan been coordinated with state or local government response organization? Circle the appropriate response.

Yes

☒ No

9.23 Who is responsible for monitoring worker safety at your facility? Circle the appropriate response.

Plant safety specialist

Insurance carrier

OSHA consultant

Other (specify)

☐ Mark (X) this box if you attach a continuation sheet.

10.02 Specify the exact location of your facility (from central point where process unit is located) in terms of latitude and longitude or Universal Transverse Mercator (UTM) coordinates.

Latitude 42 ° 06 ' 45 "

Longitude 75 ° 58 ' 20 "

UTM coordinates Zone UK, Northing _____, Easting _____

10.03 If you monitor meteorological conditions in the vicinity of your facility, provide the following information.

Average annual precipitation inches/y

Predominant wind direction

10.04 Indicate the depth to groundwater below your facility.

Depth to groundwater meters

10.05 For each on-site activity listed, indicate (Y/N/NA) all routine releases of the listed substance to the environment. (Refer to the instructions for a definition of Y, N, and NA.)

CBI

☐

On-Site Activity

Environmental Release

	<u>Air</u>	<u>Water</u>	<u>Land</u>
Manufacturing	<u>NA</u>	<u>NA</u>	<u>NA</u>
Importing	<u>NA</u>	<u>NA</u>	<u>NA</u>
Processing	<u>Y</u>	<u>NA</u>	<u>NA</u>
Otherwise used	<u>NA</u>	<u>NA</u>	<u>NA</u>
Product or residual storage	<u>NA</u>	<u>NA</u>	<u>NA</u>
Disposal	<u>NA</u>	<u>NA</u>	<u>NA</u>
Transport	<u>NA</u>	<u>NA</u>	<u>NA</u>

☐ Mark (X) this box if you attach a continuation sheet.

PART C FUGITIVE EMISSIONS

10.13 Equipment Leaks -- Complete the following table by providing the number of equipment types listed which are exposed to the listed substance and which are in service according to the specified weight percent of the listed substance passing through the component. Do this for each process type identified in your process block or residual treatment block flow diagram(s). Do not include equipment types that are not exposed to the listed substance. If this is a batch or intermittently operated process, give an overall percentage of time per year that the process type is exposed to the listed substance. Photocopy this question and complete it separately for each process type.

CBI

☐

Process type

Percentage of time per year that the listed substance is exposed to this process type

Equipment Type	Number of Components in Service by Weight Percent of Listed Substance in Process Stream					
	Less than 5%	5-10%	11-25%	26-75%	76-99%	Greater than 9
Pump seals ¹						
Packed						
Mechanical						
Double mechanical ²						
Compressor seals ¹						
Flanges						
Valves						
Gas ³						
Liquid						
Pressure relief devices ⁴ (Gas or vapor only)						
Sample connections						
Gas						
Liquid						
Open-ended lines ⁵ (e.g., purge, vent)						
Gas						
Liquid						

¹List the number of pump and compressor seals, rather than the number of pumps or compressors

10.13 continued on next page

☐

Mark (X) this box if you attach a continuation sheet.

10.15 Equipment Leak Detection -- If a formal leak detection and repair program is in place, complete the following table regarding those leak detection and repair procedures. Photocopy this question and complete it separately for each process type.

CBI

NA

☐ Process type

Equipment Type	Leak Detection Concentration (ppm or mg/m ³)	Detection Device	Frequency of Leak Detection (per year)	Repairs Initiated (days after detection)	Repairs Complete (days after initiated)
	Measured at Inches from Source				
Pump seals					
Packed					
Mechanical					
Double mechanical					
Compressor seals					
Flanges					
Valves					
Gas					
Liquid					
Pressure relief devices (gas or vapor only)					
Sample connections					
Gas					
Liquid					
Open-ended lines					
Gas					
Liquid					

Use the following codes to designate detection device:

POVA = Portable organic vapor analyzer

FPM = Fixed point monitoring

0 = Other (specify) _____

☐ Mark (X) this box if you attach a continuation sheet.

PART E NON-ROUTINE RELEASES

10.23 Indicate the date and time when the release occurred and when the release ceased or was stopped. If there were more than six releases, attach a continuation sheet and list all releases.

<u>Release</u>	<u>Date Started</u>	<u>Time (am/pm)</u>	<u>Date Stopped</u>	<u>Time (am/pm)</u>
1				
2				
3				
4				
5				
6				

NA

10.24 Specify the weather conditions at the time of each release.

<u>Release</u>	<u>Wind Speed (km/hr)</u>	<u>Wind Direction</u>	<u>Humidity (%)</u>	<u>Temperature (°C)</u>	<u>Precipitation (Y/N)</u>
1					
2					
3					
4					
5					
6					

☐ Mark (X) this box if you attach a continuation sheet.